

I Claim:

1. A remote image data processing system for use in an aircraft comprising:
 - a. image sensing means to receive an image of the object;
 - b. means for adjusting the sensing means line of sight;
 - c. means for determining and recording a geographical position of the image sensor;
 - d. means for determining and recording a LOS angle of image data relative to the image sensor;
 - e. means for transmitting the image of the object, geographical position of image sensor and LOS angle of image as data in an electronic format;
 - f. means for receiving transmitted images, sensor position, and LOS angle as data;
 - g. means for storing image, geographic position and LOS angle data in a storing medium;
 - h. means for processing image data to identify potential objects of interest for subsequent operator review, to determine geographic location of the object and to track location of sensor relative to object;
 - k. means to store processed images data;
 - l. means to retrieve processed images and object's geographic position from storage for display;
 - m. means to visually display processed image data to human operator.
2. A remote image data processing system as claimed in Claim 1, wherein the image detector is a low resolution infrared sensor.
3. A remote image data processing system as claimed in Claim 1, wherein the image detector is a video camera.
4. A remote image data processing system as claimed in Claim 1, wherein the image detector

is a synthetic aperture radar.

5. A remote image data processing system as Claimed in claim 1, wherein the image sensor includes a means for resolving images.
6. A remote image data processing system as claimed in Claim 5, wherein the means for resolving visual images is a telephoto lens.
7. A remote image data processing system as claimed in Claim 1, wherein the means for adjusting sensor's line of sight is a one axis slewable mirror.
8. A remote image data processing system as claimed in Claim 1, wherein the means for adjusting the image sensor's line of sight is a three axis pan and tilt mechanism.
9. A remote image data processing system as claimed in Claim 1, wherein the image storage unit allows unfiltered, real time display of image data.
10. A remote image data processing system as claimed in Claim 1 wherein the image processing means allows display of image data on a frame by frame basis.
11. A remote image data processing system as claimed in Claim 1 wherein the image processing means allows means for operator control and adjustment of the speed of visual display of processed image data.
12. A remote image data processing system as claimed in Claim 1 wherein the image processing means may be bypassed to allow real time review of images and image data by operator;
13. A remote image data processing system as claimed in Claim 1, wherein the image processing unit allows operator to select an object of interest and return the image sensor to

the object's location.

14. A remote image data processing system as claimed in Claim 1, wherein the image processing unit means alerts the operator when the image data processor identifies an object of interest.
15. A remote image data processing system for use in an aircraft comprising:
- a. an aircraft including an adjustable propulsion and control system and connected to servos;
 - b. an image detector located in the aircraft and oriented to detect images on the ground during flight;
 - c. an apparatus located in the aircraft capable of controllably adjusting the image detector's line of sight with the ground;
 - d. a geographic positioning device located in the aircraft;
 - e. a first radio transmitter located in the aircraft connected to the image detector, line of sight sensor and geographic positioning device and configured transmit images, line of sight angle and geographic position of the sensor from the aircraft as data;
 - f. a first radio receiver located in the aircraft capable of receiving inputs to control the aircraft's flight and directing the orientation of the line of sight apparatus transmitted to the receiver and configured and connected to servos capable of actuating the aircraft's flight controls and the line of sight adjustment apparatus;
 - g. a second radio receiver remote from the aircraft and configured to receive images, line of sight angle and geographic position data transmitted by the first transmitter;

- h. a second radio transmitter remote from the aircraft capable transmitting control signals to the aircraft to control the aircraft's flight and direct the orientation of the line of sight apparatus;
- i. a computer connected to the first receiver configured to store, analyze, identify and display images detected by the image detector to a human operator and connected to the second transmitter, the computer being additionally connected to the second transmitter the computer being configured to generate control signals capable of transmission by the second transmitter and receipt by the first receiver to control the aircraft's flight and direct the orientation of the line of sight

16. A remote image data processing system for use in an aircraft comprising:

- a. a MAUV including adjustable control surfaces and propulsion systems connected to servos;
- b. an uncooled infra red camera located in the MAUV and oriented to detect images on the ground during flight;
- c. an apparatus located in the aircraft capable of controllably adjusting the image detector's line of sight with the ground;
- d. a GPS located in the aircraft;
- e. a first radio transmitter located in the aircraft connected to the image detector, line of sight sensor and geographic positioning device and configured transmit images, line of sight angle and geographic position of the sensor from the aircraft as data;
- f. a first radio receiver located in the aircraft capable of receiving control signals to control the aircraft's flight and directing the orientation of the line of sight apparatus transmitted

to the receiver and configured and connected to servos capable of actuating the aircraft's flight controls and the line of sight adjustment apparatus;

- g. a second radio receiver remote from the aircraft and configured to receive images, line of sight angle and geographic position data transmitted by the first transmitter;
- h. a second radio transmitter remote from the aircraft capable transmitting control signals to the aircraft to control the aircraft's flight and direct the orientation of the line of sight apparatus;
- i. a computer connected to the first receiver and transmitter configured to store, analyze, identify and display images detected by the image detector, as well as the image's geographic position to a human operator, the computer also being configured to display at the operator's option, images in unanalyzed format in real time, on a frame by frame basis, at varying speeds to alert the operator when the computer identifies an object of interest, the computer being additionally connected to the second transmitter the computer being configured to generate control signals capable of transmission by the second transmitter and receipt by the first receiver.

17. A remote image data processing system for use in an aircraft as claimed in claim 16 above wherein an apparatus capable of measuring the angle of the line of sight relative to the image detector sensor attached to the line of site apparatus;
18. A remote image data processing system for use in an aircraft as claimed in claim 16 above wherein said apparatus for resolving detected images is a motor drive telephoto lens connected to the infra red camera;
19. A remote image data processing system for use in an aircraft as claimed in claim 16 above wherein said apparatus for adjusting image detector line of sight is a three axis pan and tilt mechanism.

20. A remote image data processing system for use in an aircraft as claimed in claim 16 above, wherein the control signals actuate the aircraft's flight controls, direct the orientation of the line of sight apparatus, adjust the line of sight adjustment apparatus, redirect the aircraft back to an object of interest and fix the image sensor orientation on the object, the control signals being transmitted in real time as a part of preprogrammed flight instructions.

21. A method for remote image detection, location and identification for use on an aircraft comprising the steps of :

- a. detecting images using an image detector, located in an aircraft;
- b. determining the aircraft's geographic position;
- c. measuring the angle line of sight of the image detector relative to the object;
- d. calculating a geographic position of the object relative to the aircraft using the aircraft's geographic position and the line of sight angle and correlating the object geographic location with a matching object image frame;
- e. analyzing object images using object identification, recognition algorithms to prescreen objects of interest to the operator;
- f. sorting and collating frames containing objects identified by use of object identification, recognition algorithms for review by the operator.

22. The method as recited in claim 20, further comprising the step of: viewing the detected images as they are received in real time with out use of object identification/recognition algorithms.
23. The method as recited in claim 20, wherein the aircraft position location is obtained from GPS data.
24. The method as recited in claim 20, wherein the aircraft position location is obtained from an inertial guidance system.
25. The method as recited in claim 20 wherein the images are stored in a ground station remote from the aircraft.
26. A method of determining an object's geographical location using a moving image detector, the method comprising the steps of:
 - a. measuring the distance traveled between first and second object sighting positions;
 - b. measuring a line of sight angle to the object at each object sighting position;
 - c. triangulating a first object geographical estimate using the distance traveled between the first sighting and the second sighting as the base of the triangle formed between two line of sight angles obtained from the first and second sightings;
 - d. repeating steps a through c to obtain a second object position estimate;
 - e. averaging geographical position estimates to obtain object position.

27. A method of determining an object's geographical location using a moving image detector, as in claim 26, method further comprising repeating steps a through c to obtain a third position of the object.